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Proposed Best Demonstrated Available Technology (BDAT) Background Document for Wastes from the Production of Chlorinated Aliphatics F205. Volume 3

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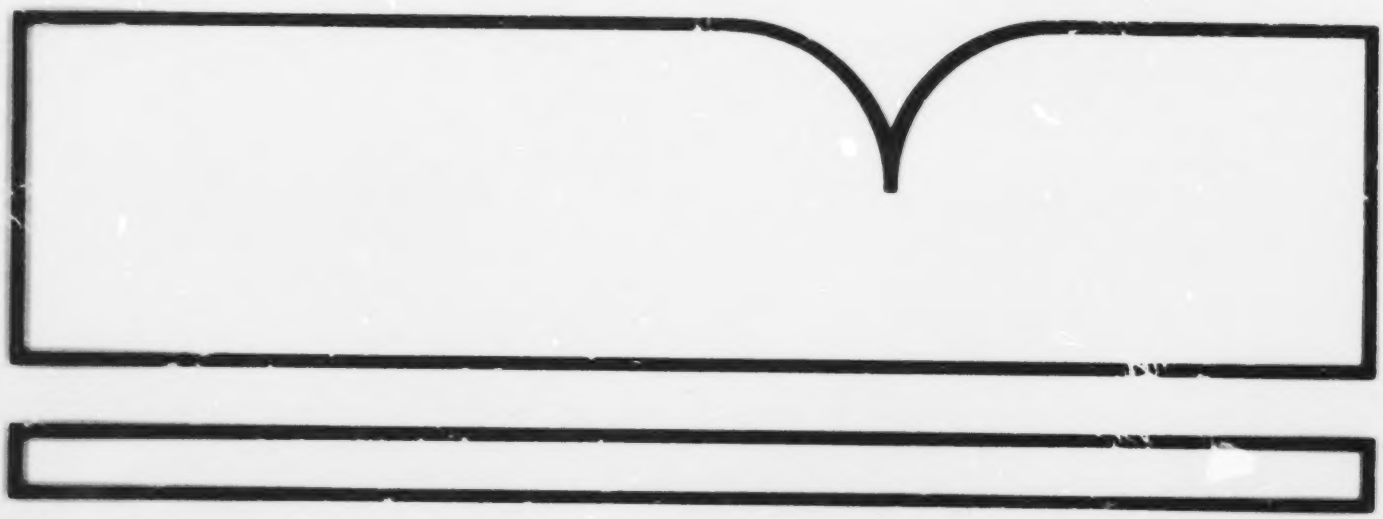

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This background document provides the Agency's rationale and technical support for selecting the constituents to be regulated in F025 and for developing treatment standards for these constituents. Section 2 presents waste-specific information (the industry affected and waste characterization); Section 3 discusses the applicable and demonstrated technologies used to treat the waste; Section 4 summarizes the available performance data, including data on which the treatment standards are based. Section 5 explains EPA's determination of BDAT; and Secton 6 discusses the calculation of the proposed BDAT treatment standards.

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PROPOSED

BEST DEMONSTRATED AVAILABLE TECHNOLOGY (BDAT) BACKGROUND DOCUMENT FOR WASTES FROM THE PRODUCTION OF CHLORINATED ALIPHATICS

F025

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1. INTRODUCTION

In accordance with the amendments to the Resource Conservation and Recovery Act (RCRA) of 1976, enacted in the Hazardous and Solid Waste Amendments (HSWA) of November 8, 1984, the Environmental Protection Agency (EPA) is establishing proposed best demonstrated available technology (BDAT) treatment standards for F025 wastes. Although the listing of F025 as a RCRA hazardous waste has not been promulgated as of the writing of this document, the Agency currently expects that such listing will occur prior to the promulgation of the Third Third final rule and has therefore decided to propose concentration-based treatment standards for F025 waste with the Third Third proposed rule. The Agency anticipates that F025 wastes will be listed as condensed light ends, spent filters and filter aids, and spent desiccants from the production of certain chlorinated aliphatic hydrocarbons.

This background document provides the Agency's rationale and technical support for selecting the constituents to be regulated in F025 and for developing treatment standards for these constituents. Section 2 presents waste-specific information, i.e., the industry affected and waste characterization. Section 3 discusses the applicable and demonstrated technologies used to treat the waste (or similar wastes), and Section 4 summarizes the available performance data, including data on which the treatment standards are based. Section 5 explains EPA'S determination of BDAT, while Section 6 discusses the calculation of proposed BDAT treatment standards.

The Agency's legal authority and promulgated methodology for establishing treatment standards and the petition process necessary for requesting a variance from the treatment standards are summarized in EPA's Methodology for Developing Best Demonstrated Available Technology (BDAT) Treatment Standards (USEPA 1989b).

The Agency anticipates that F025 waste, although not officially listed at the present time, will be listed as condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatics. Note that earlier the Agency proposed listing F025 as "light ends" but now is planning to narrow the listing to include only "condensed light ends." Industry profile information is available in the Listing Background Document for Chlorinated Aliphatics which include waste F024, for which BDAT treatment standards were promulgated as part of the Second Third rulemaking.

Detailed waste information is available in Confidential Business Information (CBI) report RE8401270, "Waste Management Assessment of the Chlorinated Aliphatics Industry," December 1983, and CBI memorandum BP8501952, "Economic Impact Screening Analysis of the Chlorinated Aliphatics Listing," March 31, 1985. Persons with CBI clearance may request CBI information from the U.S. Environmental Protection Agency, Office of Policy, Planning, and Information (attention: Dina Villari).

The Agency is proposing to regulate eight organic constituents in F025 nonwastewaters and wastewaters in the light ends subcategory and nine organic constituents in F025 nonwastewaters and wastewaters in the spent filters/aids and desiccants subcategory. (See Tables 1-1 through 1-4 at the end of this section.) To determine the applicability of the treatment standards, F025 wastewaters are defined as wastes containing less than 1 percent (weight basis) total suspended solids* and less than 1 percent (weight basis) total organic carbon (TOC). Wastes not meeting this definition are classified as nonwastewaters and must comply with the nonwastewater treatment standards when the rule is finalized providing that F025 is listed at that time.

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* The term "total suspended solids" (TSS) clarifies EPA's previously used terminology of "total solids" and "filterable solids." Specifically, total suspended solids is measured by Method 209C (total suspended solids dried at 103-105°C) in Standard Methods for the Examination of Water and Wastewater, 16th Edition (APHA, AWWA, and WPCF 1985).

The tables following this section list the specific BDAT treatment standards for the F025 nonwastewaters and wastewaters light ends subcategory and the spent filters/aids and desiccants subcategory. The treatment standards reflect the total concentration of each organic constituent regulated in F025 nonwastewater. The units used for total constituent concentration are mg/kg (parts per million on a weight-by-weight basis) for nonwastewaters and mg/l (parts per million on a weight-by-volume basis) for wastewaters.

The proposed concentration-based standards for F025 waste may change or may be further refined as a result of the final listing of the waste. Consequently, the Agency is not establishing an effective date for prohibition and treatment standards for this waste before the effective date of the F025 waste listing.

Table 1-1 BDAT Treatment Standards for F025
(Nonwastewaters)
Light Ends Subcategory

Regulated constituent	Maximum for any single grab sample Total composition (mg/kg)
Chloroform	6.2
1,2-Dichloroethane	6.2
1,1-Dichloroethylene	6.2
Methylene chloride	31
Carbon tetrachloride	6.2
1,1,2-Trichloroethane	5.6
Trichloroethylene	5.6
Vinyl chloride	0.035

Table 1-2 BDAT Treatment Standards for F025
(Wastewaters)
Light Ends Subcategory

Regulated constituent	Maximum for any single grab sample Total composition (mg/l)
Chloroform	0.035
1,2-Dichloroethane	0.007
1,1-Dichloroethylene	0.007
Methylene chloride	0.037
Carbon tetrachloride	0.007
1,1,2-Trichloroethane	0.007
Trichloroethylene	0.007
Vinyl chloride	0.033

Table 1-3 BDAT Treatment Standards for F025
(Nonwastewaters)
Spent Filters/Aids and Desiccants Subcategory

Regulated constituent	Maximum for any single grab sample Total composition (mg/kg)
Chloroform	6.2
Methylene chloride	31
Carbon tetrachloride	6.2
1,1,2-Trichloroethane	6.2
Trichloroethylene	5.6
Vinyl chloride	0.035
Hexachlorobenzene	37
Hexachlorobutadiene	28
Hexachloroethane	30

Table 1-4 BDAT Treatment Standards for F025
(Wastewaters)
Spent Filters/Aids and Desiccants Subcategory

Regulated constituent	Maximum for any single grab sample Total oomposition (mg/l)
Chloroform	0.035
Methylene chloride	0.037
Carbon tetrachloride	0.007
1,1,2-Trichloroethane	0.007
Trichloroethylene	0.007
Vinyl chloride	0.033
Hexachlorobenzene	0.055
Hexachlorobutadiene	0.931
Hexachloroethane	0.034

2. INDUSTRY AFFECTED AND WASTE CHARACTERIZATION

This section describes the industry affected by the land disposal restriction for F025 wastes and presents available characterization data for this waste. F025 is not currently listed in 40 CFR; however, the Agency anticipates that F025 will be listed as follows: condensed light ends, spent filters and filter aids, and spent desiccants from the production of chlorinated aliphatic hydrocarbons.

2.1 Industry Affected and Process Description

The listing background document for F024 specifies that F024 wastes include, but are not limited to, distillation residue, heavy ends, tars, and reactor clean-out wastes from the production of chlorinated aliphatic hydrocarbons, having a carbon content ranging from one to five carbons utilizing free radical catalyzed processes. The F024 listing does not include (among other components) the condensed light ends, spent filters and filter aids, and spent desiccants, which are expected to be listed as F025 wastes.

Since the production processes for F025 wastes are likely to be similar to that for F024, see Section 2 of the Best Demonstrated Available Technology Background Document for F024 (USEPA 1989) for generic information concerning process description and facilities that are likely to generate wastes from the production of chlorinated aliphatic hydrocarbons. Figure 2-1 (at the end of this section) presents a generic process diagram of the production of C-1 to C-5 chlorinated aliphatic hydrocarbons, which generates F024. This diagram shows the light ends and filters that are expected to be components of the F025 wastes when F025 is listed.

2.2 Waste Characterization

Waste characterization for F025 is incomplete since the entire industry was not surveyed and generators did not provide complete information. However, Table 2-1 summarizes the available data for F025 wastes.

Table 2-1 F025 Waste Characterization*

Constituents	Light ends	Filters/Aids	Desiccants
1,1,2-Trichloroethane	0.01-0.1%	D	
1,1-Dichloroethylene	0.1-1%		
1,2-Dichloroethane	1-25%		
Carbon tetrachloride	0.1-50%	0.1-1%	0.01-50%
Chloroethane	1-50%		
Chloroform	10-50%	0.0001-10%	0.01-50%
Hydrogen chloride	>50%		
Hexachlorobenzene			0.62 ppm
Hexachlorobutadiene		3.6 ppm	1-3.6 ppm
Hexachloroethane			350 ppm
Methylene chloride	0.01-1.3%	0.1-10%	0.01-50%
Trichloroethylene	0.09%		4 ppm
Vinyl chloride	10->50%	D	

*Some of the data ranges were expanded to help conceal Confidential Business Information.
D - Detected
References: Dynamac Corp. November 1, 1989.
Listing Background Document for F024 Waste.

As previously mentioned, the data for F025 waste are incomplete; however, the Listing Document for Chlorinated Aliphatics lists the waste

volume of F025 as 29,000 metric tons, which is about one-third less than the 100,000 metric tons calculated from the support data. Since EPA is now going to list only condensed light ends, the actual volumes will be less than the data shown in Table 2-2, which are estimates based on industry surveys and engineering assumptions.

Table 2-2

Waste Management/Location

	Incinerator		Landfill	Recycle/Reuse	Volume
	Onsite (%)	Offsite (%)	Offsite (%)	Onsite (%)	(kkg/yr)
Light Ends	18	2		80	99,566
Filters/Aids	19		81		422
Dessicants			38	62	300
Total					100,288

Reference: Listing Document for Chlorinated Aliphatics

2.3 Treatability Group

EPA bases its treatability group decisions primarily on whether wastes are generated by the same or similar industries and from similar processes. EPA believes that such groupings can be made because of the high probability that waste characteristics that affect treatment performance will be similar for different types of F025 wastes and, therefore, similar levels of treatment performance can be achieved. Based on the anticipated similarities among industries and processes generating F025, the Agency has categorized them as a single treatability group identified as chlorinated aliphatics.

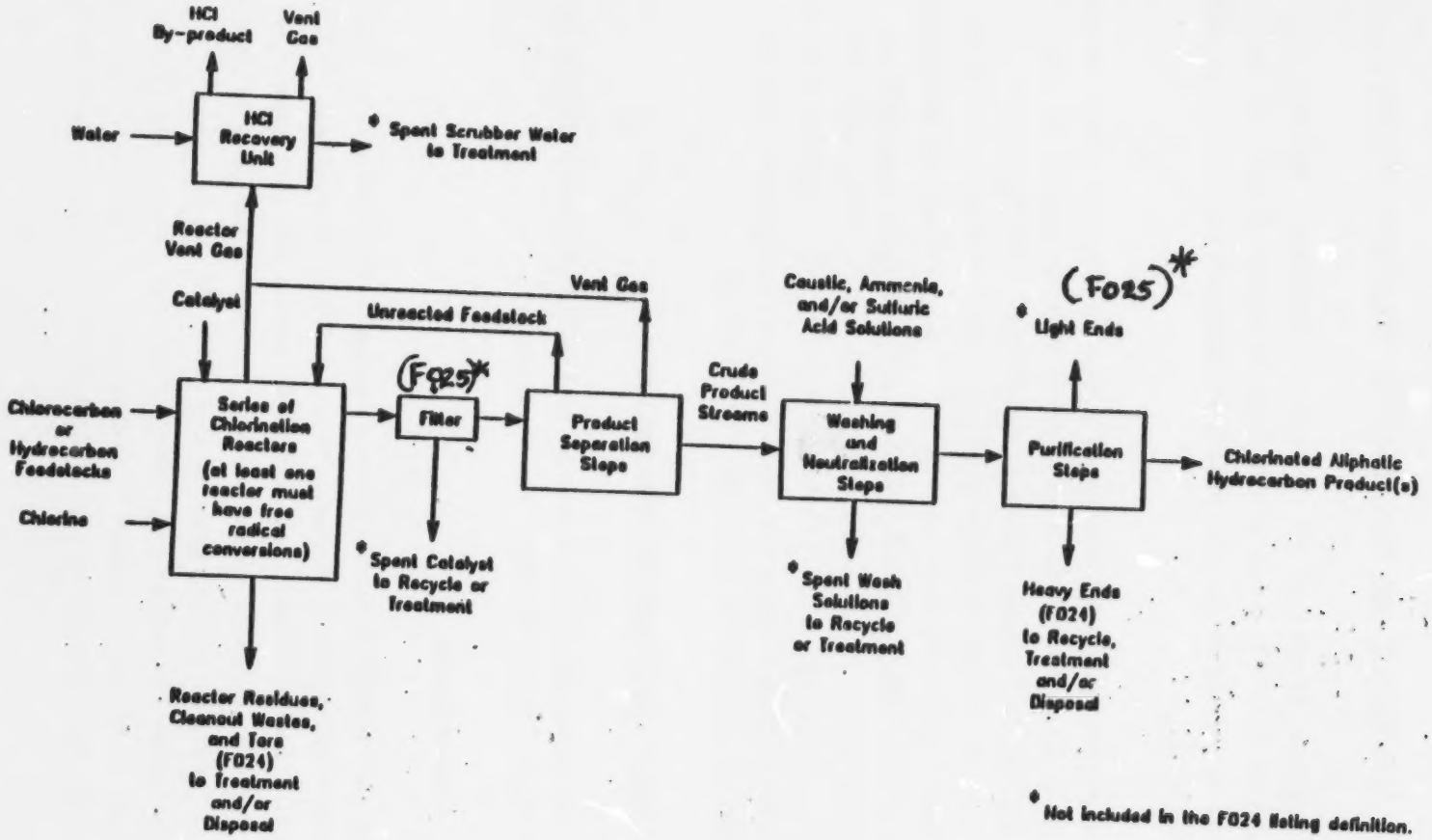
HCl By-product
Vent Gas
Water
HCl Recovery Unit
* Spent Scrubber Water to Treatment
Reactor Vent Gas
Catalyst
Vent Gas
Unreacted Feedstock
(F025)*
Chlorocarbon or Hydrocarbon Feedstocks
Chlorine
Series of Chlorination Reactors (at least one reactor must have free radical conversions)
Filter
Product Separation Steps
Crude Product Streams
Caustic, Ammonia, and/or Sulfuric Acid Solutions
Washing and Neutralization Steps
(F025)*
* Light Ends
Purification Steps
Chlorinated Aliphatic Hydrocarbon Product(s)
* Spent Catalyst to Recycle or Treatment
* Spent Wash Solutions to Recycle or Treatment
Heavy Ends (F024) to Recycle, Treatment and/or Disposal
Reactor Residues, Cleanout Wastes, and Tars (F024) to Treatment and/or Disposal
* Not included in the F024 listing definition.

Figure 2-1 Generic Flow Diagram for Processes Generating F024

3. APPLICABLE AND DEMONSTRATED TREATMENT TECHNOLOGIES

This section identifies the treatment technologies that are applicable to the F025 wastes and determines which, if any, of the applicable technologies can be considered demonstrated for the purpose of establishing BDAT.

To be applicable, a technology must be theoretically usable to treat the waste in question, or to treat a waste that is similar in terms of the parameters that affect treatment selection. (For detailed descriptions of the technologies applicable for these wastes, or for wastes judged to be similar, see EPA's Treatment Technology Background Document (USEPA 1989).) To be demonstrated, the technology must be employed in full-scale operation for the treatment of the waste in question or a similar waste. Technologies that are available only at research facilities or at pilot- and bench-scale operations are not considered in identifying demonstrated technologies.

3.1 Applicable Treatment Technologies

The following subsections present applicable treatment technologies for F025 wastes (nonwastewaters and wastewaters).

3.1.1 Nonwastewaters

Since nonwastewater forms of these wastes contain hazardous organic constituents at treatable concentrations, applicable treatment technologies include those that destroy or reduce the total amount of various organic compounds in the waste. The Agency has identified the following treatment technologies as applicable for these wastes: (1) incineration (fluidized bed, rotary kiln, and liquid injection); (2) solvent extraction followed by incineration or recycle of the extract and/or raffinate (residual); (3) critical fluid extraction followed by

incineration; (4) wet air oxidation; (5) chemical oxidation; and (6) distillation. A seventh technology, total recycle or reuse, may also be applicable for F025 waste. These treatment technologies were identified based on current waste treatment practices and engineering judgment.

(1) **Incineration**. Incineration is a destruction technology in which energy, in the form of heat, is transferred to the waste to destabilize chemical bonds and destroy hazardous organic constituents. In a fluidized bed incinerator, waste is injected into the fluidized bed material (generally sand and/or incinerator ash), where it is heated to its ignition temperature. Heat energy from the combustion reactions is then transferred back to the fluidized bed. Ash is removed periodically during operation and during bed change-outs.

In a rotary kiln incinerator, wastes are fed into the elevated end of the kiln, and the rotation of the kiln mixes the waste with hot gases to heat the waste to its ignition temperature. Ash is removed from the lower end of the kiln. Combustion gases from the kiln enter the afterburner for complete destruction of waste constituents. Other wastes may also be injected into the afterburner.

In a liquid injection incinerator, liquid wastes are atomized and injected into the incinerator. In general, only wastes with low or negligible ash content are amenable to liquid injection incineration. Therefore, this technology generally does not result in the generation of a significant ash residual.

Combustion gases from most incinerators are then fed to a scrubber system for cooling and removal of entrained particulates and acid gases, if present. In general, with the exception of liquid injection incineration, two residuals are generated by incineration processes: ash and scrubber water.

(2) Solvent extraction. Solvent extraction is a separation technology whereby a contaminant dissolved in a liquid waste is transferred from the waste to an extracting solvent that dissolves the contaminant. For solvent extraction to be effective, the extracting solvent must not be significantly miscible in the waste to be treated and must differ in density so that phase separation is possible. This technology results in the generation of two residuals: a treated waste residual (raffinate) and an extract. The extract and/or raffinate may be recycled or treated by incineration.

(3) Critical fluid extraction. Critical fluid extraction is a solvent extraction technology in which the solvent (which is generally liquified gas at or beyond its critical state) is used to extract hazardous organic constituents from the wastes in the same way as solvent extraction above. After the extraction step, the solvent is brought back to its normal (ambient pressure) condition in the gaseous state, generating a small volume of extract that is concentrated in hazardous organic constituents. This technology results in the generation of two residuals: a treated waste (raffinate) and an extract. The extract may be recycled or treated by incineration. The raffinate can usually be incinerated.

(4) Wet air oxidation. Wet air oxidation is a destruction technology in which hazardous organic constituents in wastes are oxidized and destroyed under pressure at elevated temperatures in the presence of dissolved oxygen. This technology is applicable for wastes composed primarily of water and having up to 10 percent total organic concentration. Wet air oxidation results in the formation of one treatment residual: treated effluent. The treated effluent may require further treatment for hazardous organic constituents by biological treatment and/or carbon adsorption or other wastewater treatment technologies.

(5) Chemical oxidation. Chemical oxidation is a treatment technology that may be used to treat wastes containing organics and in some cases to treat sulfide and cyanide wastes. The basic principle of chemical oxidation is that some dissolved organic compounds, inorganic cyanides, and sulfides are chemically oxidized to yield carbon dioxide, water, salts, single organic acids, and, in the case of sulfides, sulfates. The principal chemical oxidants used are hypochlorite, chlorine gas, chlorine dioxide, hydrogen peroxide, ozone, and potassium permanganate.

(6) Distillation. Distillation is the vaporization of one or more volatile components out of liquid solution by the application of heat. Individual components vaporize in order of their volatility so that relatively pure products result upon condensation of the volatilized components. Organic products that were volatilized are typically purified and recovered. Nonvolatile residues of less volatile components remain behind in the distillation vessel bottoms, which typically are incinerated.

(7) Total recycle or reuse. Total recycle or reuse of a waste in the same process from which it originated, or another process, eliminates the generation of the waste and ideally generates no treatment residuals.

3.1.2 Wastewaters

Since wastewater forms of F025 wastes contain hazardous organic constituents at treatable concentrations, applicable technologies include those that destroy or reduce the total amount of various organic compounds in the waste. Therefore, the Agency has identified the following treatment technologies as potentially applicable for treatment of these wastes: (1) incineration, (2) wet air oxidation, (3) chemical oxidation, (4) biological treatment, (5) carbon adsorption, (6) solvent

extraction, (7) distillation, and (8) steam stripping. A ninth technology, total recycle or reuse, may also be applicable for F025 wastewaters. These treatment technologies were identified based on current waste treatment practices and engineering judgment.

Application of these technologies is often dependent upon the concentrations and types of waste constituents present in the waste. Carbon adsorption, for example, is often used as a polishing step following primary treatment by biological treatment, solvent extraction, or wet air oxidation. Typically, carbon adsorption is applicable for treatment of wastewaters containing less than 0.1 percent total organic concentration and wet air oxidation, biological treatment, and solvent extraction are applicable for treatment of wastewaters containing up to 1 percent total organic concentration.

(1) **Incineration**. Incineration of wastewaters is identical to that of nonwastewaters as described previously in Section 3.1.1. EPA believes that incineration may be an applicable technology for F025 wastewaters because incineration typically provides significant destruction (even for wastewaters) and some of these wastewaters may actually contain high concentrations of carbon (near 1 percent total organic carbon (TOC)).

(2) **Wet air oxidation**. Wet air oxidation of wastewaters is identical to that of nonwastewaters as described previously in Section 3.1.1.

(3) **Chemical oxidation**. Chemical oxidation of wastewaters is identical to that of nonwastewater as described previously in Section 3.1.1.

(4) **Biological treatment**. Biological treatment is a technology that uses living microorganisms to decompose organic constituents.

Biological treatment can occur either in the presence of oxygen, known as aerobic treatment, or in the absence of oxygen, known as anaerobic treatment. In aerobic treatment the organic constituents are broken down by the microorganisms into water, carbon dioxide, and lower molecular weight organic components. In anaerobic treatment the organic constituents are broken down into water, methane, and other organic components.

(5) Carbon adsorption. Carbon adsorption is a separation technology in which hazardous organic constituents in wastewaters are selectively adsorbed onto activated carbon. This technology results in the formation of two treatment residuals: a treated effluent and spent activated carbon.

(6) Distillation. Distillation of wastewaters is identical to that of nonwastewaters as described previously in Section 3.1.1

(7) Solvent extraction. Solvent extraction of wastewaters is identical to that of nonwastewaters as described previously in Section 3.1.1.

(8) Steam stripping. Steam stripping is a technology that can separate more volatile materials from less volatile materials by vaporizing the more volatile materials and then condensing them. As such, it is a type of distillation process.

(9) Total recycle or reuse. Total recycle or reuse of wastewaters is identical to that of nonwastewaters as described previously in Section 3.1.1.

3.2 Demonstrated Treatment Technologies

The following subsections present demonstrated treatment technologies for halogenated aliphatic nonwastewaters and wastewaters.

3.2.1 Nonwastewaters

The Agency has identified incineration as a demonstrated technology for treatment of similar nonwastewater forms of halogenated aliphatics, i.e., K019, F024, and various other aliphatic wastes. Incineration is demonstrated on a full-scale operational basis for treatment of the above-mentioned nonwastewater waste codes and other wastes in the halogenated aliphatic treatability group as determined by review of the data from many of the treaters of these wastes identified in the 1986 National Survey of Treatment, Storage, Disposal, and Recycling Facilities (TSDR Survey). For the land disposal restrictions program First, Second, and Third Third scheduled wastes, the Agency tested rotary kiln incineration for treatment of many halogenated aliphatic wastes similar to F025.

From review of the 1986 TSDR Survey and EPA's Water Engineering Research Laboratory data base, the Agency determined that some facilities also treat wastes judged to be similar to F025, i.e., K019, F024, and various aliphatic U-wastes, on a full-scale operational basis using incineration, wet air oxidation, chemical oxidation, and distillation; therefore, EPA believes that these technologies are also demonstrated for these wastes.

EPA does not have information on facilities using critical fluid extraction, solvent extraction, or total recycle or reuse for treatment of the above-mentioned halogenated aliphatic wastes, and therefore the

Agency believes that these treatment technologies are not currently demonstrated for F025 wastes.

3.2.2 Wastewaters

From review of the 1986 TSDR Survey and EPA's Water Engineering Research Laboratory data base, the Agency has determined that some facilities treat (listed in Tables 1-1 through 1-4) using incineration, biological treatment, carbon adsorption, wet air oxidation, chemical oxidation, distillation, and steam stripping. Therefore, EPA believes that these technologies are demonstrated for the F025 wastes. Since the 1986 TSDR Survey did not identify any facilities using critical fluid extraction, solvent recovery, or recycle/reuse, the Agency believes that these technologies are not demonstrated for F025 wastes.

4. PERFORMANCE DATA BASE

This section presents the data available on the performance of the demonstrated technologies in treating F025 wastes. These data are used elsewhere in this document for determining which technologies represent BDAT (Section 5) and for developing proposed treatment standards (Section 6). Eligible data may include data developed at research facilities, or through other applications at less than full-scale operation, as long as the technology is demonstrated (as defined in Section 3.2) in full-scale operation for the similar waste or wastes.

Where data are not available on the treatment of the specific wastes of concern, the Agency may elect to transfer performance from the treatment of a similar waste or wastes, using the demonstrated performance data technology. EPA's methodology for the transfer of treatment performance data is provided in Methodology for Developing Best Demonstrated Available Technology (BDAT) Treatment Standards (USEPA 1989b). To transfer data from another waste category, EPA must find that the wastes covered by this background document are no more difficult to treat (based on the waste characteristics that affect performance of the demonstrated treatment technology) than the treated wastes from which performance data are being transferred.

The performance data used to develop the proposed treatment standards for the constituents in F025 waste identified in Tables 1-1 through 1-4 (excluding vinyl chloride, hexachlorobutadiene, and hexachlorobenzene) are the same as the performance data used for the halogenated aliphatic U-wastes, for which treatment standards have been proposed in the Third Third rulemaking. For a complete discussion on the use of the performance data for the halogenated aliphatic U-wastes, see Section 4 of the Proposed Best Demonstrated Available Technology (BDAT) Background Document for Halogenated Aliphatic U-Wastes, which is available in the RCRA docket for the Third Third rulemaking.

The treatment performance data used to develop the proposed treatment standards for vinyl chloride, hexachlorobutadiene, and hexachlorobenzene are the same as those used to develop the proposed treatment standards for vinyl chloride (U043), hexachlorobenzene (U127), and hexachlorobutadiene (U128) for which proposed treatment standards were developed with the Third Third rulemaking. For a detailed discussion of the performance data used to develop the proposed treatment standards for hexachlorobenzene (U127) and hexachlorobutadiene (U128), see the Proposed Best Demonstrated Available Technology (BDAT) Background Document for Halogenated Pesticide and Chlorobenzene, Halogenated Phenols, and Phenolic Wastes (USEPA 1989c). For a discussion of the performance data used to develop the proposed treatment standards for vinyl chloride (U043), see the Proposed Best Demonstrated Available Technology (BDAT) Background Document for Miscellaneous Halogenated Organic Wastes, Wastes of a Pharmaceutical Nature, Brominated Organic Waste, Organo-Sulfur Compound Wastes, and Organo-Nitrogen Compound Wastes. (All of the above-mentioned background documents are available in the RCRA docket for the Third Third rulemaking.)

5. IDENTIFICATION OF BEST DEMONSTRATED AVAILABLE TECHNOLOGY (BDAT)

The Agency believes that both nonwastewater and wastewater forms of F025 may be generated; therefore, the Agency has developed proposed treatment standards for both forms. The BDAT for F025 is the same as that presented in the Proposed Best Demonstrated Available Technology (BDAT) Background Document for Halogenated Aliphatic U-Wastes (USEPA 1989e). Therefore, for further information, refer to Chapter 5 of that document, which is available in the RCRA docket for the Third Third rulemaking.

6. CALCULATION OF PROPOSED BDAT TREATMENT STANDARDS

The calculation of the proposed BDAT treatment standards for F025 wastes (except for vinyl chloride, hexachlorobutadiene, and hexachlorobenzene) is the same for the proposed halogenated aliphatic U-waste BDAT treatment standards. See Chapter 6 in the halogenated aliphatic U-waste background document. The calculation of the proposed BDAT treatment standards for hexachlorobutadiene and hexachlorobenzene in F025 waste is the same as that presented in the Proposed Best Demonstrated Available Technology (BDAT) Background Document for Halogenated Pesticide and Chlorobenzenes, Halogenated Phenolic, and Phenolic Wastes. The calculation of the vinyl chloride proposed treatment standard for F025 waste is the same as that for U043 (vinyl chloride) and is presented in Chapter 6 of the Best Demonstrated Available Technology (BDAT) Background Document for Miscellaneous Halogenated Organic Wastes, Wastes of a Pharmaceutical Nature, Brominated Organic Wastes, Organo-Sulfur Compound wastes, and Organo-Nitrogen Compound Wastes. Therefore, for detailed information see the above-mentioned background documents, which are available in the RCRA docket for the Third Third rulemaking.

7. REFERENCES

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